After his retirement from the Army, in 1902, he organised the British Section of the St. Louis International Exhibition in 1904. His interest in Egypt and the Sudan never waned, and in 1912 the latter was the subject of an address which he gave as president of the Geography Section of the British Association. His interest in the East, and in the scientific study of it, led to his accepting the presidency of the Palestine Exploration Fund in succession to his friend and brother-officer, Sir Charles Wilson, and in this position he not only supported the prosecution of scientific archæology, but also advanced our knowledge of the topography of southern Palestine.

Interested in metrology, he championed, in a work on the subject, the cause of British weights and measures as preferable to those of the metric system. His inquiries into the various standards of length led him into an interesting bye-path of history, and it was only last week that we published a paper by him wherein he showed the close connection of our present standards of length and area with the old Egyptian and Babylonian measures.

NOTES.

ON account of the restrictions imposed by the Government on the importation of wood-pulp and other materials used in paper manufacture, the supply of paper has been compulsorily reduced. In common with other periodicals, we are, therefore, under the necessity of reducing the size of NATURE; and we ask the indulgence of our readers for the curtailments which must be made while the limitations of paper-supply exist. It is particularly desirable that all contributors should confine themselves to essentials, points of prime importance, in order that our record of scientific work and events may still be as extensive as possible, though it must necessarily be less detailed. We trust that the present conditions are only temporary, and need scarcely say that immediately the normal supply of paper is available we shall revert to the usual number of columns.

THE *London Gazette* of March 13 notifies the appointment of 2nd Lieut. G. I. Taylor, R.F.C., to the temporary rank of Major in the Royal Flying Corps, while performing the duties of professor of meteorology. Major Taylor is a fellow of Trinity College, Cambridge, to whom the Adams prize was recently awarded. He is the author of the valuable report on meteorology in the voyage of the *Scotia*, undertaken for the Board of Trade. Up to the outbreak of war he held the Schuster readership of the Meteorological Office at the University of Cambridge. His predecessor in that appointment was Mr. E. Gold, now Commandant of the Meteorological Section, R.E., who was mentioned in Lord French's despatches, and has been nominated for the D.S.O. The professorship of meteorology to which Major Taylor is appointed is a new establishment, for which the Meteorological Office is responsible, for instruction and special researches in the structure of the atmosphere in the interest of the Royal Flying Corps.

WE regret to see the announcement of the death, on March 16, of Lady Kelvin: she survived by nine years her husband, who died on December 17, 1907. Lady Kelvin (*née* Frances Anna Blandy) was a daughter of the late Charles R. Blandy, one of the principal residents of Madeira. Lord Kelvin, then Sir William Thomson, first met her during one of the submarine cable-laying expeditions, in June, 1873. The acquaintance then made ripened into more than friendship, and a year later Sir William sailed to Madeira in his yacht, the *Lalla Rookh*, to claim Miss Blandy as his wife. They were married on June 24, 1874, and sailed back in the yacht. Early in August Lady Thomson was welcomed into the circle of family relations and university colleagues at Glasgow, and directed his household with dignity and grace. She became the inseparable companion of his after life, and accompanied him not only in his many summer voyages on his yacht, and on two trips to the United States, and on visits to foreign academies, but became a familiar figure at British Association meetings and other scientific gatherings. Soon after their marriage Sir William and Lady Thomson busied themselves over the building of his country house, "Netherhall," near Largs, in Ayrshire, the scene in after years of many family reunions and of extended hospitalities. It was to this house that Lord Kelvin withdrew when he retired in 1899 from his professorship at Glasgow; it was there that he died, and there also Lady Kelvin has died. Lady Kelvin from about twenty years ago had suffered from rheumatic troubles, and was accustomed to pay an annual visit to Aix-les-Bains for a course of treatment. It was during her return from that resort in September, 1907, that she was struck down by a severe paralysis, from which she had not recovered when Lord Kelvin died, and which left her infirm for the rest of her life, which she spent between the home at Netherhall and the residence in Eaton Place, Belgravia, which Lord Kelvin had taken after his elevation to the peerage in 1892. Lady Kelvin was fond of society, and played the part of hostess with stately dignity. She was president of the West of Scotland Women's Unionist Association, but otherwise took no considerable part in politics. The assiduous care and thought with which she devoted herself to Lord Kelvin during his declining years are known to all.

DR. D. H. SCOTT, F.R.S., has been elected a foreign member of the Royal Swedish Academy of Sciences, in succession to the late Count Solms-Laubach.

THE anniverary meeting of the Chemical Society will be held on Thursday, March 30, when Dr. Alexander Scott will deliver his presidential address, entitled "Our Seventy-fifth Anniversary."

THE Right Rev. Dr. J. H. Bernard, Archbishop of Dublin, has been elected president of the Royal Irish Academy in succession to Prof. J. P. Mahaffy, Provost of Trinity College, Dublin.

THE *Morning Post* of March 20 announces that Thursday last, being the seventieth birthday of the distinguished Swedish mathematician, Prof. M. G. Mittag-Leffler, he and his wife bequeathed their entire fortune to the foundation of a new International Institute for pure mathematics.

THE Secretary of the War Office announces that Surgeon-General W. Babtie, V.C., has been appointed to assist Surgeon-General Sir A. Keogh, Director-General Army Medical Services, especially in the work of supervision of invaliding and all questions connected with the physical fitness of the troops at home.

WE learn from the *American Journal of Science* that Prof. J. C. Moberg, of the University of Lund, Sweden, the distinguished palæontologist and stratigrapher, died on December 30, 1915, at the age of sixty-one years. His scientific work related in the main to the older Palæozoic formations of Sweden.

SIR THOMAS H. HOLLAND, F.R.S., professor of geology and mineralogy in the University of Manchester, has been appointed chairman of a Commission which the Government is forming to survey the economic resources and industrial possibilities of India, with the view of promoting business enterprise under the changed conditions that will follow the restoration of peace.

THE death of Sir Charles Ball, Bart., at sixty-five years of age, occurred on March 17 in Dublin. Sir Charles Ball was honorary surgeon to the King in Ireland, and regius professor of surgery in the University of Dublin, and the author of various works on surgery. The late Sir Robert Ball and Dr. Valentine Ball, director of the Dublin Science and Art Museum, were his elder brothers.

MISS GLADYS POTT, who recently visited France with a party of working women, under the auspices of the Board of Agriculture and the Board of Trade, will give an account of her experiences at a meeting, organised by the committee of the Women's Patriotic Bureau, 415 Oxford Street, to be held at the Kensington Town Hall on Friday, March 31. H.R.H. Princess Christian of Schleswig-Holstein has consented to be present; and the chair will be taken by the Lady Wantage. In view of the importance at the present time of training women in this country in farm work, and of interesting scientific agriculturists in the matter, it is hoped that the meeting will be largely attended by people disposed to assist the scheme.

THE twenty-fifth annual report of the council of the Institution of Mining and Metallurgy, presented at the annual meeting of the institution, held to-day, shows that in March, 1915, more than 300 members of the institution were serving with H.M. Forces. Since then the number has been more than doubled, and it now represents above 25 per cent. of the total membership. The membership of the institution on December 31 last was 2441, as compared with 2492 at the end of 1914. During 1915 thirty members of the institution lost their lives in the war. Sir Richard A. S. Redmayne has been elected president, in succession to Sir Thomas K. Rose.

ELIZABETH LADY LAWRENCE, whose death on March 18 we record with regret, only survived her husband, the late Sir J. J. Trevor Lawrence, by a little more than two years. She shared her husband's love of plants and beautiful flowers; and at their country seat at Burford, Dorking, was to be seen one of the finest private collections of conspicuous sorts, as well as many of the most interesting genera and species of both hemispheres. Lady Lawrence continued the long and honoured association of Sir Trevor Lawrence with the Royal Horticultural Society, and recently took an active part in the work of the fund organised by the society for the relief of ruined Belgian horticulturists. She was also keenly interested in astronomy, and had a wide circle of scientific friends, all of whom will long mourn her death.

WITH the approval of the King, Royal medals of the Royal Geographical Society have been awarded as follows:—The Founder's Medal to Lieutenant-Colonel P. H. Fawcett, for his explorations and surveys on the upper waters of the Amazon; and the Patron's Medal to Capt. F. M. Bailey, Indian Army, for his exploration of the Tsangpo-Dihang river in the hitherto almost unexplored country where it breaks through the Himalayas. Other awards adjudged by the council of the society are:—Murchison award to Lieut.-Colonel Whitlock, R.E., for his work in connection with the delimitation of the Yola-Chad boundary in 1903–5, and the Yola Cross river boundary in 1907–9; the Back award to Mr. Frank Wild, second in command of Sir Ernest Shackleton's transcontinental Antarctic Expedition, for his distinguished and long-continued services in the exploration of Australia; the Cuthbert Peek award to Mr. F. Kingdon Ward for his several enterprising journeys in the frontier regions between China and Burma, and to assist him in the further exploration of those regions; the Gill Memorial to Lieut.-Colonel E. M. Jack, R.E., for his distinguished service in the delimitation and demarcation of the Uganda-Congo boundary.

THE American *Museum Journal* for January, which has just reached us, contains a very interesting article by Messrs. Clark Wissler and Herbert Spinden, on the Pawnee human sacrifice to the morning star. According to the authors, the "historic home of the Pawnee was Nebraska." As a matter of fact, the Pawnee belonged to the very considerable Shoshone-Pawnee family, whose range was much wider. But, be this as it may, the authors have brought together some extremely useful facts in regard to the occasional sacrifice by these people of a young girl, always a prisoner of war. This was a religious observance, and the captive was treated as a goddess, till the day of the sacrifice. The custom seems to have come from Mexico, where prisoners of war were similarly treated, but in this case the victims were males. The authors give a very complete account of what is known of these ceremonies, and to this they add a number of most excellent illustrations.

THE *Museums Journal* for March very properly reprints the recent discussion in the House of Lords on the closing of museums, thereby affording those who are concerned with the conduct of such institutions a convenient source of reference to this epoch-marking event. For we have in this the measure of the value our rulers set upon the scientific work of the country. We talk much of the education of the "masses," but it is now abundantly evident that the "educated" have still much to learn. Many of the speakers during that debate seemed to be under the impression that the mental equipment attained at Eton suffices to meet all the demands of later life. Though some of the speakers were actually trustees of the British Museum, yet they displayed neither knowledge of the nature of the work of that institution, nor of museums in general.

THE flora of the Maltese Islands was first studied in 1827–31 by Prof. Stefano Tesaga, and in his "Floræ Melitensis Thesaurus" he enumerated 635 species of Phanerogams, 489 of which were natives of the islands. Then followed Delicata's "Flora Melitensis," with an enumeration of 726 species of flowering plants, and this formed the most complete account of the Maltese flora up to the present time. It is true that further additions to the flora have been made from time to time since then, noticeably by Dr. A. C. Gatto, Mr. J. F. Duthie, E. Armitage, and Col. M. J. Godfrey. Finally, Dr. Sommier, the well-known Florentine botanist, explored the flora in 1906 and 1907, and at that time arranged with Dr. A. C. Gatto to write a new flora of Malta, which was published in Italian at Florence at the close of last year, under the title of "Flora Melitensis Nova." We are indebted to Mr. G. Gambin, of Malta, for bringing this work to our notice, and also for an interesting review by Dr. J. Borg which appeared recently in the *Daily Malta Chronicle*. The new flora consists of 500 pages, and includes 916 species of Phanerogams and vascular Cryptogams, 78 Mosses, 18 Hepatics, 183 Lichens, 296 Algæ, and 499 Fungi. The flora on the whole is closely related to the Sicilian, though many plants are also found in North Africa. There are also a few interesting endemic species.

THE third part of "The Useful Plants of Nigeria," forming Additional Series No. ix. of the Kew Bulletin, has just been published. This part, consisting of pp. 343–536, includes the families Rubiaceæ to Labiatæ inclusive, and deals in detail with the plants of economic value contained in those families. The publication is a valuable companion volume to the "Flora of Tropical Africa," also emanating from Kew, and stands to the flora in a similar position as does Sir George Watt's classic "Dictionary of the Economic Products of India" to the "Flora of British India." Now that the "Flora of Tropical Africa" is nearing completion, it is to be hoped that the publication of the final part of this useful complementary volume dealing with the economic plants will not be long delayed. One of the most valuable features in "The Useful Plants of Nigeria" is the list of references cited at the end of each species, which appears to be well-nigh exhaustive in every case. The present part contains accounts of various rubber-yielding plants, tobacco, coffee, teak, *Achras Sapota*—the source of chicle gum—etc. With regard to this latter product, as, indeed, is the case with many other plants of economic importance, botanists are not yet certain as to the exact species or variety of tree which yields the commercial article. This publication is not only of value for our West African colonies, but is of great use at home as a source of information about the economic possibilities of tropical Africa.

P. PORSILD describes in *Meddelelser om Grönland*, vol. li., p. 253, the measures that have been taken to establish nature-reserves for plants in western Greenland, and he quotes a notice-board written in the Eskimo language, which is in itself good evidence of the spread of civilising influences.

IN *Physis* (the journal of the Sociedad Argentina de Ciencias Naturales) for November 10, 1915, F. Pastore describes some of the basalts that cover an enormous area in the plateau-land of Patagonia. At the base of the flows, which appear to have possessed great fluidity, tube-like vesicles have sometimes arisen, parallel to one another and several centimetres in length. This is clearly the same structure as that which gave rise to the "pipe-amygdaloids" of the British Isles. In the same number, in reference to a notice that appeared in NATURE of April 22, 1915, it is pointed out that R. S. Lull decided against the proboscidean nature of Pyrotherium before fully considering the characters of a skull described by Loomis. C. Ameghino afterwards urged the importance of the cranial features, and *Physis* hopes that Prof. W. B. Scott will now state his opinion of them.

PROF. H. F. OSBORN has contributed to a new part of the Annals of the New York Academy of Sciences vol. xxvi., pp. 215–315) an exhaustive review of the Pleistocene formations of Europe, Asia, and northern Africa, with full references to the recent literature of the subject. It is written in the same style as his well-known volume on "The Age of Mammals," and may be regarded as a revision and extension of the Pleistocene chapter of that work, with the addition of new discoveries. A glance at this review makes it possible to realise how difficult is the interpretation of the local superficial deposits on which alone our knowledge of the latest period of geological time is based. It is scarcely surprising that geologists' views on the Pleistocene glaciation of the northern hemisphere are very varied.

THE use of submerged wire drags towed by two ships at a short distance from one another has considerable value in increasing the accuracy of large-scale charts. Experience has shown, again and again, that even in the most carefully sounded seas dangerous rocks may be missed and only found by a ship striking. The work is, of course, neither necessary nor applicable in deep waters, but from 1906 onward a large amount of submarine survey has been accomplished by wire drags on the coast of New England. The value of the method and the cost entailed are discussed in a paper published by the U.S. Coast and Geodetic Survey (Special Publication No. 29). Several diagrams show the apparatus and methods, but these were described in detail in an earlier publication (No. 21). In order to ensure that the bottom wire is at the right depth to catch all obstructions, it is not allowed to swing free in a single sweep from one vessel to the other, but is suspended from a line of buoys. And, furthermore, to obviate the necessity of the buoys being very close to one another, and yet to prevent the line sagging, cedar floats are attached to the line between the buoys. These serve to balance the weight of the line. The nature of the method only admits of its being used where the general contours of the sea bottom have already been determined by sounding. It appears that on the coast of New England the wire drag has disclosed many unsuspected rocks and reefs.

WE have received from the director of the Royal Meteorological Institute of the Netherlands a set of copies of the De Bilt declination, horizontal force, and vertical force curves on the principal days of magnetic disturbance of the year 1913. The preparation and circulation of such curves is an international scheme, De Bilt serving as headquarters for the selection of the days. On the whole, 1913 was a very quiet year magnetically, and none of the selected disturbances were very large. They include, however, several interesting movements, amongst others three "sudden commencements." The curves are clearly shown on good paper, and full details are given of scale values and base-line values.

MESSRS. A. GALLENKAMP AND CO., LTD., announce the issue of a set of models and other apparatus designed with the view of facilitating the teaching of military science. Four of these, bearing on field telephones, are now ready, and should prove of service to teachers in the various schools and colleges in which military instruction is in progress. The items consist of a diagram-model of the D Mark III. telephone, arranged so as to show the working and adjustment of the buzzer, models of the receiver and transmitter, both of which may be dissected, and a board showing the correct method of repairing a broken line in the field. The tracing of circuits and the arrangement of windings is made easy by the use of coloured cords, and an examination of the models should enable a beginner to form a correct idea of the working of the various parts. Models of this kind should be found specially useful at military training centres, as a telephonist who understands his instrument is far more trustworthy than one whose work is merely automatic. Full descriptions of the models are contained in the circular issued by the firm.

La Nature for February 26 contains an illustrated description of the Nice automatic public telephone system, which has been in operation since October, 1913, and has now 3000 subscribers. The subscriber wanted is called up by the sender of the message without the intervention of any person at a central office. This is done by means of a small circular disc with numbered holes round its circumference attached to the front of the ordinary telephone box. The sender who wishes to ring up, say, No. 2547, on taking down his receiver is automatically connected to a selector at the central office. On inserting his finger in the hole numbered 2 of his disc, and rotating it to the stop at zero, two short currents are sent out, which move the arm of the selector to the second group of a thousand subscribers. A repetition of the rotation with the finger in the hole 5 moves the arm of a second selector on to the fifth hundred, and so on until the actual subscriber wanted is reached. When the receiver is hung up the sender's connection with the selectors is broken. The arrangements of the circuits of the selectors are shown by figures, and the author, M. E. Coustet, considers an automatic system of this kind the only solution of the present difficulty of apportioning the blame for delays between the subscriber and the *personelle* of the exchange.

IN the *Scientific American* of February 12 there is an account of an invention by Mr. J. B. Flowers of a new phonetic machine. The complete apparatus is still at an experimental stage, but much has been accomplished. Mr. Flowers has investigated the physical nature of whispered sounds lasting for short periods, say, the 1/50th of a second; and as a recorder he makes use of Einthoven's string galvanometer, acted on by an acoustical transmitter. The oscillations of the galvanometer were all photographically recorded on a revolving drum, and it is found that there is a definite form for each whispered sound. Thus there is always the same picture, say, for the sound B, and the number of times this picture is repeated in, say, 1/50th of a sec.—*frequency*—determines pitch, while *amplitude* of the components of the picture determines *intensity*. Thousands of experiments have been made, and thus Mr. Flowers has constructed a new phonetic alphabet, each letter of which has always the same form or curve. The next step was the invention of another instrument which would record the speech patterns, not as sounds, but as variations in intensity. This is accomplished with the aid of sensitive electrical resonators, varying in pitch; these act on a beam of light which vibrates on a selenium cell, and the sound patterns are reproduced by varying resistances acting on an electrically-driven pencil and drum. Speech sounds may also be directly recorded in this way, without the use of the string galvanometer. It is this part of the apparatus that appears to be incomplete, but it is said that the record so obtained "is fully as easy to decipher as that of a siphon recorder used in cable telegraphy."

PROF. O. D. CHWOLSON, in a paper, "Sur les poids atomiques," in the *Bulletin de l'Académie Impériale des Sciences* (Petrograd), discusses the numerical values of the atomic weights from the point of view of the part played by the number 4, that of the helium atom, which radio-active change has shown to be an integral part of the atoms of the radio-active elements. He shows that the number of elements approaching the value $4n$ is one and a half times greater than those approaching the value $4n+2$, where n is an integer, and that whereas the first class tend to approach the whole number, the second class tend to avoid it. Considering the departure of the atomic weights from whole numbers of the form $4n$ he discovers a preference for the values comprised within 0 and $\pm 0{\cdot}5$, and between ± 1 and $\pm 1{\cdot}5$, which may be attributable to the presence of an atom of hydrogen.

IN connection with the University of Calcutta, "extension lectures" are being delivered, and that on January 10, by Dr. P. C. Rây, the dean of the faculty of science of the University, is before us. The lecture consists of a brief *résumé* of original chemical researches carried out in Bengal in the last twenty years, and as an appendix a list of 126 papers contributed to various societies, such as the Chemical Society, Journal of the American Chemical Society, and others, is given. Some of these papers are of very considerable value and interest, and indicate enthusiastic work on the part of this newly created school, which is mainly due to the example and work of Prof. Rây himself. Prof. Rây's first published work was the "History of Hindu Chemistry," written about thirteen years ago, in which he showed there was considerable scientific spirit and also more or less empirical work amongst the ancient Hindus, as indicated in their religious writings, "Tantras," etc., written in ancient Sanskrit. It is, of course, only a man like Prof. Rây, well acquainted with Sanskrit and with a thorough knowledge of modern chemistry, who could have written such a work. In this book Prof. Rây deplored the decline of scientific spirit in India, and "lamented that the spirit of inquiry had died out amongst a nation naturally prone to speculation and metaphysical studies." He now writes:—"Little did I dream that in the course of a decade or so I should have to revise the estimate I then formed of the capacities of my own countrymen and chronicle that a bright chapter is about to dawn in our life-history." It certainly appears from the present activity of original chemical research in Bengal that a new spirit is abroad, and it is to be hoped that this will quickly spread over the remainder of India, and that the same spirit of research will embrace all the other sciences.

THE *Amateur Photographer and Photographic News* have just issued their seventh annual "Empire Number," an enlarged number that appeals especially to the Colonies and Overseas Dominions and those in this country who seek a more intimate relationship with them. It is well illustrated, and includes contributions, both pictorial and literary, from Africa, Australia, India, and other parts of the British Empire.

A NEW and revised edition of Yarrell, Newton, and Saunders's "History of British Birds," edited by W. Eagle Clarke, is in course of preparation for publication by Messrs. Gurney and Jackson. The late Mr. Howard Saunders placed all his collected notes for a new edition of the work at Mr. Eagle Clarke's disposal. A feature of the new edition will be a coloured plate of each species, the work of Miss L. Medland.

THE following volumes are in preparation for Messrs. Longmans and Co.'s "Text-books of Physical Chemistry"—Electro-Chemistry, part ii., Dr. E. B. R. Prideaux; Practical Spectrographic Analysis, Dr. J. H. Pollok; Crystallography, T. V. Barker. For appearance in the same firm's "Monographs on Inorganic and Physical Chemistry" the following are in preparation:—Electrolytic Dissociation Theory, Dr. J. C. Philip; The Physical Chemistry of Flames, J. E. Coates; Clays, Dr. J. W. Mellor; Catalysis of Gas Reactions, D. L. Chapman; The Electro-Chemistry of Non-Aqueous Solutions, J. W. McBain; Catalysis in Liquid Systems, Dr. G. Senter; The Rare Earth Metals, Dr. J. F. Spencer; Hydrates in Solution, Prof. E. A. Washburn; Adsorption, V. Lefebure and A. M. Williams.

OUR ASTRONOMICAL COLUMN.

OPPOSITION OF THE MINOR PLANET (4) VESTA.—G. Stracke has calculated an ephemeris for this planetoid for the period including the coming opposition on April 15 (Circular No. 502, *Astronomische Nachrichten*). Vesta is the only one of the very numerous swarm of lesser planets that at times becomes visible to the unaided eye, and although this opposition is not the most favourable possible, yet it occurs towards peri-